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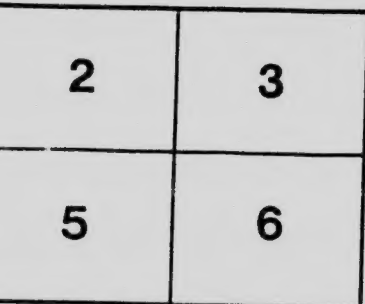
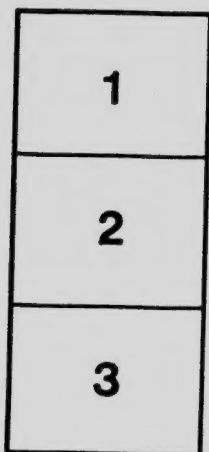
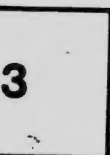
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PROVINCE OF BRITISH COLUMBIA.

DEPARTMENT OF AGRICULTURE
(HORTICULTURAL BRANCH).

The Imported Cabbage-worm

(*Pieris rapæ* Linn.).

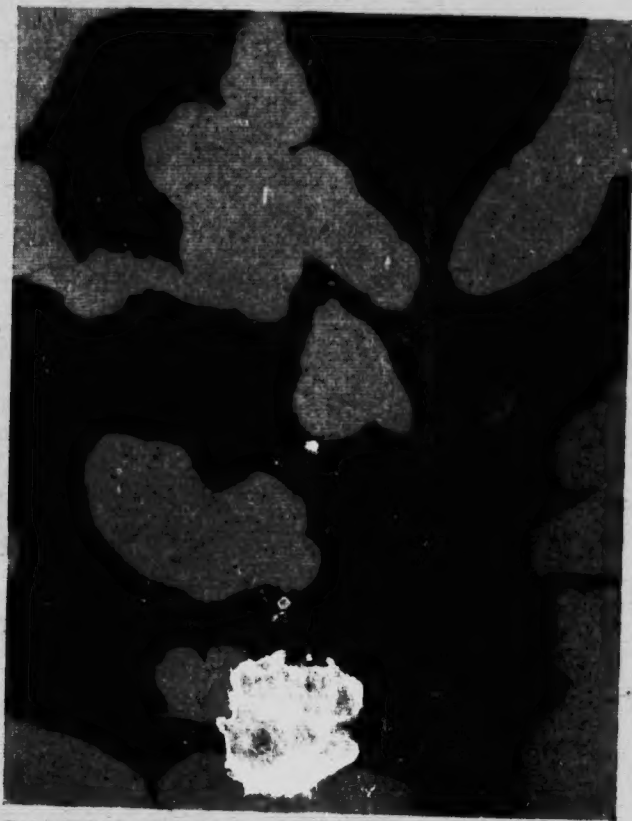
THE imported cabbage-butterfly, or, as it is more commonly called, the "green cabbage-worm," is a well-known pest in British Columbia. It was first observed in the eastern sections of the Province in 1898. It spread rapidly westward and was recorded in vegetable plantations on the immediate Pacific Coast in 1901, while in 1902 it was found on Vancouver Island.



120, West Virginia.)
The adult butterflies: (a) Male; (b) female. (After Rumsey and Brooks. Bull.

The importance of this insect is well known to vegetable-growers, whose notice is first attracted by the velvety-green caterpillars, about an inch in length, which perforate the leaves and heads of cabbages and cauliflowers. It is not frequently realized that the beautiful white butterflies which may be seen flitting about over the cabbage plantations

are the adults which give rise to these obnoxious green "worms." Nevertheless, such is the case, and an illustration is presented above which represents an adult male and female. Butterflies of this appearance may be seen early in the spring, sometimes as early as March, and they may be found still active throughout the summer and until the autumn.



Green cabbage-worms on a leaf. (After Britton and Lowry.
Bull. 100, Connecticut.)

They deposit eggs on the leaves of any plant of the cabbage or cruciferous family, usually laying them on the under-surface of a leaf. In about a week these eggs hatch into small green worms which commence feeding at once. They gradually grow until they may become over an inch in length. These caterpillars, as stated before, are velvety-green in colour, and they may be recognized from other "worms" which attack cabbage-leaves (1) by their length when full-grown, and (2) by the presence of a yellowish stripe along the back.

The caterpillars or larvæ, as they are sometimes called, having completed their feeding, which they usually accomplish in from two to three weeks form chrysalides or pupæ which are at first pale green, but gradually assume a brown shade of colour. These pupæ are about $\frac{3}{4}$ inch in length, and may be found, suspended by silken threads, on the leaves of the food-plant on buildings, or on any convenient solid object in the vicinity. During the spring and summer, only from one to two weeks are passed in the chrysalis stage—a stage which is entirely dormant. Then the adult white butterflies appear, to continue the life-history as before. In the autumn, however, the last pupæ to form remain dormant all winter, and these chrysalides are the ones which give rise to those butterflies seen so early in the spring. As a rule, three generations occur in a single year, and they overlap so considerably that eggs, larvæ, pupæ, and adults may at times be found simultaneously.



Chrysalis of imported cabbage-butterfly: natural size. (After Britton and Lowry.)

Control Measures.

The worm, larva, or caterpillar stage is the only period in the life-history of this insect which is amenable to treatment on a commercial or practical scale. It is clearly a leaf-feeding caterpillar which freely devours great portions of the leaf-surface. It can, therefore, be controlled by an application of an arsenical which it takes directly into its stomach while in the process of feeding. Arsenate of lead represents the most suitable and economical arsenical to use. The only question that is liable to arise is, "What effect will poisoned cabbage have on the human system?" The answer is, "No effect, if arsenate of lead is used in normal and judicious quantity, and

preferably only applied during spring and early summer." Still less danger is present if the vegetables are washed, cleaned, and cooked before being eaten.

The following formula is recommended: Arsenate of lead (paste), 1 lb.; whale-oil soap, 1 lb.; water, 20 imperial gallons.

Preparation.—Mix the arsenate in a small quantity of water. Dissolve the soap in warm water. Mix both with the water required, so that the whole equals 20 gallons. This mixture may be applied direct to the leaves by syringe or hand-pump. Keep the mixture well agitated during spraying, as the lead arsenate, being an insoluble poison, is liable to settle and unequal distribution may result.

Pyrethrum powder may also be applied in a wet or in a dry form. This insecticide is better made use of in late summer when the plants are attaining marketable size. It is perfectly safe to apply and no ill results to humans attends its use. If used as a spray, mix together: Fresh pyrethrum powder, $\frac{3}{4}$ lb.; whale-oil soap, $\frac{3}{4}$ lb.; water, 20 imperial gallons.

If used dry, it may be applied by a powder-gun or may be placed in a cheese-cloth bag and be lightly tapped with a stick over the plants. The following formula is recommended in this instance: Fresh pyrethrum powder, 1 lb.; cheap flour, 4 lb. The flour should be thoroughly mixed with the pyrethrum powder. Better results are obtained if the two powders are mixed and allowed to stand in a tight container for one day, so that the flour itself becomes thoroughly impregnated with the virtues of the poison.

Resin, 1 lb., and sal soda, $\frac{1}{2}$ lb., boiled together for an hour may be used as an additional "sticker" for waxy leaves. This is sufficient for 20 gallons of liquid spraying.

Victoria, B.C., issued March, 1918.

This circular has been prepared by R. C. Treherne, Field Officer for British Columbia, Entomological Branch, Dominion Department of Agriculture, at the request of the Horticultural Branch.

Copies of this circular may be obtained free of charge on application to the Horticultural Branch, Department of Agriculture, Victoria, B.C., or from local branch offices of the Department.

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